



CYPRUS

MEDICAL & SANITARY REPORT

1946



NICOSIA

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ANNUAL MEDICAL AND SANITARY REPORT FOR THE YEAR 1946.

GENERAL REMARKS

I. ADMINISTRATION.

The chief feature of the past year has been the attempt to return to normal peace-time conditions with fuller general medical activities both in the fields of clinical and of preventive medicine, planning of future development, increased use of special methods of treatment introduced during the war years and the experiment in eradication of anopheles mosquitoes in the Karpass peninsula and subsequent extension of the scheme to a wider area of the Island as a winter campaign.

Training of staff has been given considerable prominence of which fuller details are given later in this report. It is clear that the shortage of trained staff is one of the major factors in holding up future development, and efforts are being made to rectify this by increased training facilities both locally and abroad.

TEN-YEAR DEVELOPMENT PROGRAMME.

Fuller details of the programme may be obtained from the general Government publication on this subject. Its practical application during the year consisted of the experiment in anopheles mosquito eradication in the Karpass peninsula, the continuation of the Rural Health Unit at Athienou and planning of future hospital development. The last mentioned subject was furthered by the setting up of separate committees consisting of the District Medical Officer, Divisional Engineer and Architect under the Chairmanship of each District Commissioner. The object of these committees was to produce plans for the development of each district hospital both as regards the ultimate work and that to be carried out in the interim.

ANOPHELES ERADICATION EXPERIMENT.

A full report on this experiment has been submitted elsewhere. Suffice it to say that the experiment carried out under the direction of Mr. M. Aziz, M.B.E., Chief Health Inspector, was considered highly successful and that no anopheles mosquitoes, adult or larvae, were discovered in the area concerned from mid-September until the date of writing. In order to facilitate work over a wider area next year, a winter campaign has been started to cover almost two-thirds of the Island, and it is intended to attempt complete eradication from the Colony over a period of three years.

RURAL HEALTH UNIT (ATHIENOU).

Owing to the impossibility of obtaining trained staff no further rural health units were established in 1946 and the unit at Athienou was continued on an experimental basis. Of the success of the work done in this area there can be no doubt, and it was immensely popular with the local people.

Confidence in ante-natal and child welfare clinics as well as the other functions of the unit increased and attendances showed a considerable rise. The area covered consists of some 30 villages with a total population of approximately 33,000. The popularity of the ante-natal and child welfare sections can be seen from the following returns:—

Ante-natal Clinic.

Cases registered for the year	..	..	..	..	..	..	..	601
Subsequent visits at the clinic	..	..	..	..	..	..	..	3,180
Home visits by M.O. i/c, M.Os, S. H. Visitor, H. Visitors and H. Unit Midwives								2,827

Infant Welfare Clinic.

New registration children (Athienou and Dhali Section)	..	..	..	..	2,092
New registration children (Lysi Area)	..	..	..	..	1,111
Subsequent visits at the clinic (Athienou and Dhali Section)	..	..	..	..	14,565
Subsequent visits at the clinic (Lysi Section)	..	..	..	..	1,750
Home visits for looking after sick children and teaching mothers or others how to manage the sick	..	..	..	..	3,858

The chief difficulty lies in the financial adjustment necessary to make the units economically possible. The original scheme envisaged the cost being met from village funds and Government contribution on a fifty/fifty basis the estimated total cost being approximately £7,300 per annum. Increased wages and general expenses have, however, raised these costs to over £10,000 and it is doubtful whether villages contributions could be found to meet half this sum especially in the poorer parts of the Island. Considerable cuts in staff have had to be made and a reasonable balance is still sought between the staff required and the amount of work to be carried out. Assessment of villages in order to ascertain what contribution is possible has not yet been undertaken.

COOLEY'S ANAEMIA.

Dr. Fawdry, District Medical Officer, has carried out considerable research on the subject of Cooley's Erythroblastic anaemia. Cyprus is the only part of the British Empire in which this disease occurs on any scale and much material for investigation exists. Owing to its obvious importance Dr. Fawdry's paper is appended to this report.

REFUGEES.

The evacuation of refugees from the Island with the exception of a few cases (4 lepers and a case of pulmonary tuberculosis) has been completed, but owing to the situation in Palestine it was found necessary to admit Jewish Illegal Immigrants in large numbers to certain Camp areas in the Island. The responsibility for medical care of these immigrants was vested in the Military Authorities and Civil Services took part only in minor matters, chief of which was the admission of a number of maternity cases to Civil Hospitals. Close liaison was maintained with the Military Authorities in order to ensure that quarantine regulations were strictly adhered to and no cases have been recorded of infectious disease being passed from this quarter to the civil population.

(A) ESTABLISHMENT.

The establishment of the Medical Department during 1946 is given as Appendix "A".

The names of the holders of the principal appointments are as follows :—

ACTING APPOINTMENTS.

				<i>Appointment</i>	<i>from</i>	<i>to</i>
Dr. C. H. Howat, S.M.O. (Surgeon)	..	..		D.M.S.	14. 3.46	19. 5.46
Dr. P. W. Dill-Russell, D.M.O. (H)	..	..		D.M.S.	20. 5.46	12. 8.46
					8. 9.46	31.12.46
Dr. G. E. J. Porter, D.M.O.	..	..	..	S.M.O. (S)	7. 6.46	27. 9.46
Dr. Th. Astreos	..	..	..	D.M.O. (L'ca.)	5. 2.46	31.12.46
Dr. M. G. Constantinides	..	..	..	T.O.	7.12.46	31.12.46
Mr. L. Haralambides..	..	..	..	Analyst	1. 1.46	31.12.46

NEW APPOINTMENTS.

					<i>Appointment</i>	<i>Date</i>
Dr. P. W. Dill-Russell	..	..	..	..	Asst. D.M. & H.S.	8.10.46
Miss Elsie Bonehill	..	..	..	..	Nursing Sister	1. 3.46
Miss E. H. P. Patterson	..	..	..	..	do.	18. 4.46
Miss Rose Mary Faux	..	..	..	..	do.	25. 8.46
Miss Joan P. Collinson	..	..	..	..	do.	3.11.46
Miss Margaret G. Richards	..	..	..	..	Tuberculosis Nurse	14. 5.46
Miss Gladys Bowyer	..	..	..	..	do.	14. 5.46

PROMOTIONS.

					<i>Appointment</i>	<i>Date</i>
Miss Nina Vorga	..	..	..	..	Nursing Sister	1. 1.46
Miss Christina Farres	..	..	..	..	Staff Nurse	1. 1.46

SECONDMENT.

Mr. M. Aziz, M.B.E. Executive Officer, Anopheles Eradication Service.

REPLACEMENTS, RESIGNATIONS, TRANSFERS.

Dr. R. L. Cheverton, D.M.S.—Transferred to Nigeria.

Dr. A. L. Fawdry, D.M.O.—Transferred to Aden.

(B) LIST OF LAWS, ORDERS, REGULATIONS, AFFECTING PUBLIC HEALTH, ENACTED DURING THE YEAR.

LAWS.

No. 9: Dentists Registration (Amendment) Law, 1946.

ORDERS AND REGULATIONS.

*No. of Notice
in Gazette*

Orders and Regulations were passed under the :—

(Suppl. No. 3)

21, 242, 266, 300,
307, 314, 343, 391

Burials Laws, 1896 and 1937.

32

The Defence Regulations, 1940 to (No. 4) 1945.

117

The Quarantine Law, 1932.

227 and 244

The Hotels Laws, 1935–1943.

148, 175, 350, 411

The Public Health (Villages) Laws, 1936–1943.

277, 333, 339

The Supplies and Services (Transitional Powers) (Cyprus) Order, 1946.

356

The Pharmacy and Poisons Law, 1945.

362

The Public Health (Anti-Malaria) Laws, 1944 and 1945.

(C) FINANCIAL.

Total Expenditure of Medical Department.

				1943		1944		1945		1946
Personal Emoluments	..	..		£ 31,207	..	£ 28,988	..	£ 31,988	..	£ 51,798
Other Charges	..	..		76,567	..	96,303	..	133,940	..	106,914
Total	..	..	..	£107,774	..	£125,291	..	£165,928	..	£158,702

This represents 3.97% of the total budgetary expenditure by Government during 1946.

The total revenue of the Medical Department as shown below amounted to £21,416. 18s. 5p. as against £24,510 in 1945.

REVENUE.

					£	s.	p.
1. Sale of Drugs	..	..	..		7,041	18	7
2. Hospital Receipts	..	..	..		10,406	8	6
3. Other	..	..	..		3,968	11	1
Total	..	..	..	..	£21,416	18	5

(D) MEDICAL STORES.

In general, drugs have been more readily obtainable but owing to difficulties in shipment orders have had to be placed far ahead. Owing to improvement in the position it was found possible to close down the Commercial Stores run by the Department during the war years and, with few exceptions, the local market was able to deal with its own import and supply problems. Penicillin was easily obtained but certain control of use was maintained under Defence Regulations. Attempts have been made to concentrate medical stores in one building to facilitate the work and enable a more rigid control. With the closure of the Commercial Stores and disposal of a large amount of the goods concerned it has been found possible to do this to a large extent and it is anticipated that the work of this section of the department will be increased in efficiency.

II. PUBLIC HEALTH.

(A) GENERAL REMARKS.

The health of the Colony as measured by death rates and the incidence of notifiable diseases remained good during 1946 and data indicates that the general death rate and infant mortality rate is the lowest ever recorded (8.49 and 70.92 respectively). Apart from a rise in the incidence of diphtheria no outstanding increase in infectious diseases was noted. Prophylactic inoculation against this disease was carried out in certain areas.

(i) STATISTICS.

The following table shows the main causes of morbidity in relation to in-patients and out-patients (first attendances only) at hospitals, dispensaries, V.D. clinics and ophthalmic clinics.

The classification is based on the International List of Causes of Death, 1938.

Diseases treated in Government Institutions.

TABLE I.

Group	1945			1946		
	Total In-pat. Treated	Deaths	Total Out-pat. †	Total In-pat. Treated	Deaths	Total Out-pat. †
I. Infective and parasitic diseases ..	989	55	23,185	852	67	20,612
II. Cancer and other tumours ..	320	19	665	394	20	554
III. Rheumatism, diseases of nutrition and of the endocrine glands, other general diseases and vitamin deficiency diseases ..	223	5	5,438	178	2	7,095
IV. Diseases of the blood and blood-forming organs	70	10	2,296	82	6	3,025
V. Chronic poisoning & intoxication ..	13	—	55	8	—	59
VI. Diseases of the nervous system and sense organs	345	21	24,479	343	23	27,328
VII. Diseases of the circulatory system	251	35	4,331	196	11	4,302
VIII. Diseases of the respiratory system	534	18	10,956	405	17	10,525
IX. Diseases of the digestive system ..	1,935	46	22,607	2,024	55	31,126
X. Diseases of the urinary and genital systems (not venereal or connected with pregnancy or the puerperium)	593	19	4,175	655	16	3,977
XI. Diseases of pregnancy, childbirth and the puerperal state	1,246	17	1,939	1,428	11	1,683
XII. Diseases of the skin and cellular tissue	254	—	14,966	292	—	15,321
XIII. Diseases of the bones and organs of movement	288	10	1,842	129	—	994
XIV. Congenital malformations	18	1	61	48	—	27
XV. Diseases peculiar to the first year of life	41	1	258	2	—	50
XVI. Senility, old age	3	1	357	11	—	247
XVII. From violence	934	21	8,707	1,017	29	8,296
XVIII. Ill-defined causes	103	2	2,058	90	7	2,376
Total	8,150	281	128,375	8,154	264	137,597

† No death was recorded among the out-patients.

	1945	1946
Average number of deaths per 1,000 in-patients	34	32
Total number of days spent by the patients in hospital	90,804	92,174
Average number of days per patient in hospital	11.1	11.3

(ii) NUTRITION.

In general, it is considered that nutrition in the Island is good. Reports from medical officers do not indicate the presence of deficiency disease, and the standard of feeding is probably higher than it was before the war.

(B) DISEASES.

General systemic and communicable diseases treated in Government institutions. (The figures are given in Table I).

COMMUNICABLE DISEASES.

Of the communicable diseases, chicken-pox, diphtheria, scarlet fever, acute anterior poliomyelitis, whooping cough, anthrax and syphilis were above the 5-year median (1941-1945).

E.C.S. meningitis, typhoid fever, dysentery, tuberculosis (all forms), trachoma and relapsing fever were below the 5-year median.

Leprosy had exactly the 5-year median incidence.

(a) *Insect-borne Diseases.*

MALARIA.

4,779 cases of all forms as against 5,908 in 1945 were reported by Government Medical Officers. The full report on the experiment in anopheles mosquitoes eradication has been published elsewhere.

TYPHUS.

Two cases of tick-borne typhus were reported during the year. Both cases were fairly typical of the Fievre Boutonneuse and made uneventful recovery.

(b) *Infectious Diseases.*

SMALL-POX.

One case of small-pox was reported amongst military personnel. The source of infection was not traced and the patient made full recovery.

TUBERCULOSIS (NEW CASES).

227 (275)* cases of tuberculosis were notified during the year.

NEW T.B. CASES AMONG EX-SERVICEMEN.

21 cases of tuberculosis in ex-servicemen were reported up to the end of the year, 4 of them prisoners of war, making a total of 105 cases, 47 of them P.O.Ws, reported since 1940.

CHEST CLINICS.

The Chest Clinics were taken over by Government on 1.7.46. It is expected that the Anti-Tuberculosis League, relieved of the burden of financing the clinics, will concentrate their efforts and funds in assisting necessitous tuberculous patients and their families.

481 (465) new cases attended the clinics during the year, of whom 177 (170) were found to be tuberculous. 1,544 (1,304) pneumothorax refills were carried out, 841 (891) visits were made and 16,567½ (12,527) miles travelled by the Health Visitors during the year. The work at the clinics compared with the previous years was as follows :—

Year		New Cases		Old Cases		New T.B.Cases		A.P. Refills		Home Visits
1940	..	303	..	379	..	110	..	7	..	948
1941	..	347	..	534	..	100	..	262	..	526
1942	..	369	..	719	..	120	..	465	..	793
1943	..	358	..	1,474	..	131	..	834	..	1,068
1944	..	480	..	1,947	..	146	..	1,084	..	1,210
1945	..	465	..	2,391	..	170	..	1,305	..	891
1946	..	481	..	2,985	..	177	..	1,544	..	841

JUBILEE SANATORIUM, KYPEROUNDA.

During 1946 work continued at the Kyperounda Sanatorium ; 60 (66) patients were admitted. Collapse therapy was carried out as follows :—

Induction of Pneumothorax	..	..	..	34 (57)
Pneumothorax Refills	..	..	..	1,467 (1,565)
Pneumoperitoneum Refills	..	..	..	52 (9)
Thoracoscopy and Adhesion Section	..	..	..	39 (73)
Phrenic Paralysis	..	..	..	40 (36)
Thoracoplasty (stages)	..	..	..	3 (4)
Intercostal Incision Drainage	..	..	..	1

47 patients were discharged during the year.

The new nurses home is nearing completion and is expected to be put in use during next year.

ATHALASSA SANATORIUM.

On 22.2.46 Aghirda Sanatorium was abandoned and the patients were transferred to the old sanatorium at Athalassa. 67 (45) patients were admitted during the year of whom 21 (14) died and 39 (34) patients were discharged.

MEDICAL STAFF.

Dr. M. G. Constantinides who was sent by Government to the United Kingdom for training in Tuberculosis Work returned to Cyprus on 20.10.46 and was appointed as Assistant Tuberculosis Officer.

Dr. J. Christodoulides, Medical Officer, has been stationed at Kyperounda village and has been assisting the Tuberculosis Officer at the Kyperounda Sanatorium.

TRAINING OF NURSES.

Two Cypriot girls were sent to England during the year for training in tuberculosis nursing with the prospect of obtaining the Tuberculosis Association Certificate.

Two English nurses, holders of the Tuberculosis Association Certificate, came from the United Kingdom and started work at the Kyperounda Sanatorium on 17.5.46.

* Figures in parenthesis are those for 1945.

VENEREAL DISEASES.
(Cases treated in the V.D. Clinics).

Disease	Total	New patients		Old patients continuing their treatment
		New Cases	Chronic Cases	
Syphilis	2,093	270	298	1,525
Gonorrhoea	1,721	359	360	1,002
Other V.D.	347	347	—	—
Total	4,161	976	658	2,527

Prophylactic Centres.

Six private and five municipal prophylactic centres functioned during the year ; the attendances were as follows :—

<i>Nicosia</i>		<i>Larnaca</i>		<i>Limassol</i>		<i>Famagusta</i>		<i>Paphos</i>		<i>Total</i>
44,771	..	10,900	..	24,881	..	7,534	..	1,652	..	89,738

DYSENTERY.

The incidence of dysentery was low, 99 cases were reported, i.e. 22 cases per 100,000 of population.

TYPHOID FEVER.

409 cases were reported, i.e. 92 cases per 100,000 of population. The cases were all of sporadic form.

DIPHTHERIA.

There was an increase in the total number of cases, 191 cases being notified in 1946 as compared with 114 in 1945. Most of the cases occurred in the District of Nicosia, especially in the area of Nicosia town. Inoculation of pre-school age and school children was undertaken in Nicosia and some 4,000 children immunised.

TRACHOMA.

The incidence of trachoma was 233 per 100,000 of population. Figures relating to new trachoma cases are contained in table below :

NOTIFIABLE DISEASES.*

The following table shows the cases of notifiable diseases reported during the past three years :

Disease	1944	1945	1946
Small-Pox	3	—	1
Chicken Pox	193	187	225
Diphtheria	39	114	191
Scarlet Fever	2	4	8
E.C.S. Meningitis	35	10	9
Typhoid	505	522	409
Dysentery	191	99	99
Tuberculosis (all forms)	223	275	224
Acute Anterior Poliomyelitis	4	1	4
Trachoma	906	880	1,039
Leprosy	7	5	7
Whooping Cough	42	21	85
Anthrax	1	4	3
Relapsing Fever	2	2	3
Typhus	—	1 † (louse-borne)	2 (tick-borne)
Dengue	—	1	—
Measles	—	—	12

* Measles was again made a notifiable disease in February, 1946.

† Imported cases.

(c) VITAL STATISTICS.

During the years between the last two censuses, i.e. 1931–1945 inclusive, 174,572 births, 77,312 deaths and 44,811 marriages were recorded. The average crude birth rate was 29.9 per 1,000 of population. Regarding sexes, male births were more numerous than female births. For every 1,000 female births 1,081 male births were recorded. The number of births was highest during winter and lowest during May and June.

The average crude death rate was 13.2 per 1,000 of population. The number of male deaths was higher than that of female deaths, for every 1,000 female deaths 1,134 male deaths were recorded. Regarding the seasonal incidence, deaths were most numerous in winter and least numerous in summer, the highest being in January and the lowest in June.

The infant mortality for males was usually higher than that for female being 124 and 117 per 1,000 male and female live-births respectively. The average marriage rate was 7.7. The peaks of the marriage rate occur in the years preceding leap years. This is due to a wide-spread superstition that leap years are unlucky for marriage. Between the marriage rate of one year and the birth rate of the succeeding year a high degree of correlation has been observed, the correlation coefficient being $r=0.85 \pm 0.05$.

The 1946 population census made it possible to put our population figures once more on a sound basis.

Population.—The 1946 mean population of Cyprus is estimated to have numbered 446,770

Births.—The total number of births registered in 1946 was 14,482 or 32.41 per 1,000 of population.

Deaths.—The total number of deaths registered in 1946 was 3,791 or 8.49 per 1,000 of population. The total number of infant deaths registered in 1946 was 1,027. The infant mortality rate per 1,000 live-births was 70.92.

Both the 1946 death rate and infant mortality rate show a significant decrease. The high infant mortality rate in the district of Paphos in comparison with the other districts is also significant.

Marriages.—The number of marriages celebrated during 1946 was 4,175 or 9.3 per 1,000 of population.

VITAL STATISTICS.*

Return of Births and Deaths for the Year 1946.

DISTRICT (Urban and rural area)	Mean population	Births		Deaths		Infant mortality rate per 1,000 live- births
		No of live- births	Rate per 1,000	No. of deaths	Rate per 1,000	
Nicosia	144,952	4,699	32.42	1,170	8.07	63.84
Kyrenia	28,041	907	32.35	249	8.88	86.00
Famagusta	93,639	3,042	32.49	828	8.84	69.03
Larnaca	51,745	1,764	34.09	390	7.54	58.96
Limassol	74,848	2,469	32.99	692	9.25	72.50
Paphos	53,545	1,601	29.90	462	8.63	97.44
Whole Island	446,770	14,482	32.41	3,791	8.49	70.92

* NOTE.—Vital statistics rates are based on a mean population instead of the population on the 30th June, which is no longer used. The mean population is a weighted average of the five “end-of-the-quarter” estimates which are centred upon June 30th, the weights being 1, 4, 2, 4, 1, respectively. Undue weight which might otherwise attach to the temporary influx of visitors is thus avoided.

III. HYGIENE AND SANITATION.

The chief work of the Sanitary Staff throughout the year was concentrated on the anti-malaria campaign, but staff not employed whole-time in the work continued their activities in respect of refuse disposal, latrine accommodation, water inspection and general sanitary matters. Co-operation between the Municipal sanitary authorities and the Department continued in general to be satisfactory.

In the Rural Health Unit at Athienou increased activity in matters of hygiene were apparent and house to house surveys were carried out through the area.

The Sanitary Inspectors School functioned during the year and 13 students attended the course.

Water Supplies.—Public water supplies were controlled by routine examinations at the Government Chemical Laboratory.

Food Control.—472 samples of various foodstuffs were taken for examination, of which 123 or 26% were found to be adulterated.

IV. PORT HEALTH WORK.

The number of vessels entering the ports of Cyprus was 1,532 and of these 607 were steamships and 925 sailing vessels. 634 airplanes arrived from foreign ports. Arrivals and departures were in the neighbourhood of 28,000 as compared with 16,970 last year. Close supervision was exercised over the sea and air traffic and quarantine control was maintained in compliance with the terms of the International Sanitary Conventions.

V. MATERNITY AND CHILD WELFARE.

1,045 (661) cases were attended by Government midwives and their pupils. This figure includes both domiciliary and hospital confinements.

MATERNITY WARDS.

	1944	1945	1946
Normal labour	540	637	722
Complicated	138	152	135
Total number of maternity cases	678	789	857
<i>Deaths.</i>			
Mothers	9	5	3
Infants born alive	33	28	28
Total	42	33	31
<i>Stillbirths</i>	74	71	77

Midwifery.—The standard of training of midwives has been considerably raised. All candidates for training are required to carry out a probationary period of six months nursing in a General Hospital. The Sister Tutor has improved the lecture courses and more complete supervision and training of pupil midwives has been made possible by the presence of a regular Sister to the Maternity Ward in the Nicosia Hospital. District training of pupils has been undertaken at Limassol and the Rural Health Unit in Athienou area, also to a lesser degree in Famagusta. It is hoped to improve the standard still further in future by the inauguration of post-graduate courses.

CHILD WELFARE.

Welfare centres functioned in all the chief towns (except Kyrenia) and in the village of Athienou. They are financed and managed by voluntary efforts assisted by grants from municipal councils. 31,911 (17,263) attendances were recorded and 1,739 (3,538) home visits were made.

VI. HOSPITALS, DISPENSARIES, CLINICS AND LABORATORIES.

The following comparative table shows the number of in-patients and out-patients seen, and operations performed during 1944, 1945 and 1946.

The number of out-patients does not include the patients who attended V.D. clinics, dental clinics and ophthalmic clinics.

GOVERNMENT HOSPITALS.

Hospitals	Out-Patients			In-patients			Operations		
	1944	1945	1946	1944	1945	1946	1944	1945	1946
Nicosia	27,452	18,013*	19,011	2,346	2,588	3,034	1,436	1,469	1,777
Larnaca	11,475	11,086	10,644	1,118	1,214	1,049	495	447	624
Limassol	12,307	13,125	15,120	940	1,027	1,134	583	562	709
Famagusta	9,000	11,325	9,219	914	821	855	579	435	439
Paphos	5,320	5,745	5,143	484	496	500	113	147	217
Kyrenia	5,368	4,466	2,632	404	473	484	45	119	214
Total	70,922	63,760	61,769	6,206	6,619	7,056	3,251	3,179	3,980

* In the 1945 report the Nicosia out-patients were given to be 15,266 instead of 18,013. This was due to an oversight.

GOVERNMENT GENERAL HOSPITALS.

Hospitals under Government control are situated at Nicosia, Limassol, Famagusta, Larnaca, Paphos and Kyrenia, the four latter having been taken over from the Municipalities in 1945. Shortage of trained nursing staff has been a constant source of difficulty, but considerable improvement has been shown in this direction during the year as senior staff was brought more nearly to full strength and training of junior staff by the Sister Tutor (appointed in 1945) has been in progress. It is hoped that when improved accommodation is built for nurses, as is planned in the Development programme, better educated girls will be encouraged to join the nursing services. Nicosia hospital was working to full capacity during the latter part of the year. Certain sections of the hospital had had to be closed in 1945 owing to shortage of senior supervisory staff. All other hospitals were functioning fully throughout the year.

MENTAL HOSPITAL.

No serious illness occurred among the mental patients. Occupational therapy was started by Mrs. Adler, a trained worker, in the early part of the year and considerable progress made. Patients were trained to carry out basket making, mat making, vegetable and flower gardening and poultry farming. Payment was made for work done and extension of this work is anticipated.

MOVEMENT OF PATIENT POPULATION.

	<i>Total</i>		<i>Male</i>		<i>Female</i>	
Remaining at end of 1945	287	..	175	..	112	..
Admissions—						
Admitted for the first time	88	..	63	..	25	..
Re-admitted	35	..	27	..	8	..
On termination of parole	17	..	12	..	5	..
Total number under care and treatment	427	..	277	..	150	..
Discharges—						
Recovered	37	..	27	..	10	..
Improved	15	..	14	..	1	..
Not improved	8	..	4	..	4	..
On parole	41	..	29	..	12	..
Deaths	11	..	9	..	2	..
Total of patients discharged and dead	112	..	83	..	29	..
Remaining at end of 1946	315	..	194	..	121	..

LEPER FARM.

Social conditions at the Farm have improved considerably and the patients seem to be much more contented. It is hoped that with the appointment of a Lay Worker, the Leper Farm may well become a happier community.

	<i>Males</i>		<i>Females</i>		<i>Total</i>	
Remaining at end of 1945	60	..	31	..	91	..
Admitted	6	..	1	..	7	..
	66	..	32	..	98	..
Discharged on parole	8	..	3	..	11	..
Died	1	..	1	..	2	..
	9	..	4	..	13	..
Remaining at end of 1946	57	..	28	..	85	..

DISPENSARIES.

The following figures show the work carried out at the six districts and nineteen rural dispensaries. (In 1944 and 1945 the rural dispensaries were 17 and 18 respectively).

	1944	1945	1946
Number of first attendances	153,925	145,973	155,232
Subsequent attendances	167,257	177,740	253,592
Number of dressings	48,705	54,496	52,658
Number of prescriptions executed	431,709	447,760	455,225

OPHTHALMIC CLINICS.

The following table shows the work done by travelling and honorary oculists at ophthalmic clinics.

	1945			1946		
	Total	Trachoma	Other eye diseases	Total	Trachoma	Other eye diseases
New attendances (Not necessarily new cases) ..	14,788	2,876	11,912	15,079	3,341	11,738
Subsequent attendances ..	17,900	12,600	5,300	23,643	14,973	8,670
Operations	336	..	..	519	..	..

DENTAL CLINICS.

The total number of daily attendances at Hospital Dental Centres during the year was 30,793 out of which 17,635 were new attendances. The work done, i.e. extractions, fillings and other dental treatments at Hospital Dental Centres including Central and Athalassa Prisons, Lapithos Reformatory, Mental Hospital, Athalassa and Kyperounda Sanatoria, Leper Farm and the Athienou Rural Health Unit during the year were 35,257 together with 60 dental plates for the inmates of the Leper Farm, the prisoners and the Regular Government Employees.

Details of work done are shewn in table below :

	Nicosia and Kyrenia	Famagusta and Larnaca	Limassol and Paphos	Athienou Rural Health Unit	Total
Consultation	5,415	3,258	2,782	367	11,822
Pyorrhea	363	—	606	148	1,117
Diseases of Mouth	447	194	331	44	1,016
Operations	5	—	2	—	7
Extractions	3,164	3,621	3,494	341	10,620
Fillings	1,049	700	1,196	99	3,044
Temporary Fillings	992	2,264	1,890	130	5,276
Dental Plates	60	—	—	—	60
Scalings	445	1,153	581	116	2,295

Schools.—During the year under review the services of the three Assistant Dental Officers, the Dental Officer and the Moslem School Assistant Dental Officer were extended to 349 schools at which 15,045 pupils were examined and treated.

VII. CONTROL OF PROFESSIONAL PRACTICE.

19 Medical practitioners, 2 Dentists, 6 Chemists and Druggists and 19 Midwives were registered during the year.

TRAINING OF LOCAL MEDICAL AND HEALTH PERSONNEL.

9 girls continued their training at the Nursing School of the American University of Beirut.

9 persons were sent under the Colonial Development and Welfare Scheme for studies in the United Kingdom, as follows:—

(1) One Medical Officer for post-graduate studies at Maudsley Hospital Medical School for the Diploma in Psychological Medicine to fill the vacant post of Medical Superintendent, Mental Hospital, and organize the Mental Services on return.

(2) One Medical Officer for post-graduate studies at the Hospital for Sick Children, Great Ormond Street, W.C.1., for the Diploma in Child Health.

(3) One Health Officer for post-graduate training in work on children under the auspices of the Medical Branch of the Ministry of Education in order to organize school medical work on return.

(4) Three Cypriot girls for general nursing training at the Queen Elizabeth Hospital, Birmingham. During the year one of these girls discontinued her studies.

(5) Two Cypriot girls for tuberculosis nursing under the auspices of the Lancashire County Council in order to obtain the Tuberculosis Association Certificate.

(6) One Laboratory Technician for a course in Medical Laboratory Technology at the Institute of Medical Technology in order to obtain the Certificate of Laboratory Assistant.

The school for Health Inspectors continued to function.

The training of midwives was continued.

P. W. DILL-RUSSELL,

Acting Director of Medical and Health Services.

APPENDIX A.

REPORT OF THE SENIOR MEDICAL OFFICER (SURGEON) FOR THE YEAR 1946.

Dr. G. E. Porter acted as Surgeon for the period June to September, during the absence of the Senior Medical Officer on vacation leave.

The recommendations for increase of theatre staff made in this report for 1945 have been given effect and the staff now consists of a Surgeon, two Medical Officers, one Nursing Sister, two Staff Nurses, one probationer nurse and a part-time secretary. The provision of the latter has been especially welcome and has resulted not only in full and accurate case records being kept but in both medical officers being set free for clinical work, the senior now being full assistant to the surgeon and the junior taking the responsibility for anaesthetics.

Consequent upon the re-opening of the medical wards in the latter part of the year, the surgical ward staff was reduced in number without any detriment to nursing efficiency.

Throughout the year weekly surgical visits were paid to Kyrenia hospital where a number of beds were set aside for the accommodation of patients from the Nicosia waiting list.

SURGICAL WORK, NICOSIA HOSPITAL.

Following the introduction of a new system of recording out-patient attendances, a separate surgical register is no longer kept. Surgical out-patient figures are therefore not now available.

In-patients.—1,762 operations were performed during the year as against 1,467 in 1945; of these 917 were major and 845 minor. This latter figure includes out-patient operations.

Traumatic surgery continues to provide a large number of cases. Patellectomy is now the standard treatment of fractured patellae. Recovery is rapid and uneventful; a strong, stable, freely movable joint is obtained; even in the presence of complicating infections the prognosis is better than with other methods of treatment. In fracture of the femoral shaft it has been found that when skeletal fraction is used, early removal of the pin results in earlier mobility of the knee joint. Massage and passive movements have for long been the accepted methods of treating joint stiffness and the eradication of this idea from patients minds is difficult; old united fractures of the ankle with severe stiffness, often the result of massage, have been treated by immobilization in a walking plaster and with continuance of technical activity, the range of movement has gradually increased. During the year special attention has been paid to the nutrition of patients with severe burns. The benefit of high protein diet is directly reflected in healthy granulations and successful grafting; patients who are poorly nourished on admission frequently develop gastro-intestinal upsets when their increased demand for protein is met. The treatment of the actual burnt area is now always delayed, even up to 48 hours, until primary shock has been overcome or anticipated secondary shock dealt with. Rapid skin replacement has proved the best method of preventing infection; grafts are transferred directly from donor to recipient sites without passage through saline.

Early rising on the 3rd or 4th day continues as routine in the majority of abdominal cases. Post operative activity is found to maintain strength whereas prolonged rest leads to increasing weakness. Pulmonary complications are apparently avoided by early rising; patients have less pain in their wounds, are able to care for themselves and are ready for discharge earlier than those who remain for the customary periods in bed.

The many interesting cases seen during the year included two of unilateral congenital dislocation of the hip successfully treated by manipulation despite the age of the children, 7 and 9 respectively. A severe subluxation at the level of the 3rd cervical vertebra of 4 weeks duration which was reduced by skull fraction. A urinary fistula which developed in Scarpa's triangle on the left thigh following a fractured pelvis. A number of interesting osteotomies for malunited fractures; a case of elephantiasis of the left leg, the result of extensive scarring in the thigh. Arthritic ankylosis of the temporo mandibular joint treated by excision. A case of severe hypospadias. A case of carcinoma of the clitoris.

C. H. HOWAT,
Senior Medical Officer (S).

APPENDIX B.

GOVERNMENT PATHOLOGICAL LABORATORY.

During 1946 the total number of specimens examined, excluding medico-legal ones and autopsies, was 22,054 as compared with 16,373 in 1945.

CLINICAL LABORATORY INVESTIGATIONS.

Blood for Plasmodia.—484 were examined. In 23 p. vivax, in 21 P. Malariae and in 11 p. falciparum were present.
Blood for Treponema recurrentis.—23 were examined. 3 positive.
Blood for Leishmania-tropica.—16 were examined, with 3 positive results.
Blood for formol gel test.—12 were examined.
Sternal marrow for Leishmania donovani.—18 were examined, with 2 positive results.
Enumeration of cells and differential counts.—2,235 were made.
Haemoglobin estimations.—540 were done.
Sedimentation rate.—214 were done.
Fragility tests.—15 were done.
Coagulation time.—17 were done.
Bleeding time.—11 were done.
Packed cell volume.—14 were done.
Platelets.—10 were done.
Reticulocytes.—10 were done.
Clot retraction.—1 was done.
Grouping and compatibility tests.—116 were examined.
Takata-Ara tests.—22 were done. 17 were found positive.
Urea estimations.—298 were done.
Sugar estimations.—137 were done.
Cholesterol estimations.—12 were done.
Calcium estimations.—12 were done.
Uric acid estimations.—7 were done.
Chlorides estimations.—2 were done.
Cultures.—40 were done. B. typhi grown in 4, B. paratyphosus B in 1.
Agglutination tests for typhoid group.—748 were examined. 256 were positive to B. typhosus; 53 to B. paratyphosus A and 73 to B. paratyphosus B.
Agglutination tests for Brucella.—24 were examined.
Agglutination tests for Rickettsia (Weil-Felix).—20 were examined, with 3 positive results.
Bunnett's tests.—2 were done.
Weltmann's test.—1 was done.
Complement fixation tests.—The Wassermann Reaction was carried out on 6,421 sera; 978 of these were completely positive and 102 partially positive. The Weinberg test for hydatid disease was carried out on 36 sera, of which 2 were positive.
Kahn tests.—113 were done, with 22 positive results.
Van den Bergh Reaction.—41 were carried out, with 20 positive results.
Sputa.—1,719 specimens were submitted for examination; in 439 of these Tubercle bacilli were found either by direct examination or by the antiformin concentration method.
Urines.—2,070 specimens were examined.
Urinary calculi.—3 were examined.
Biles.—3 were examined.
Urethral and cervical smears for gonococci.—1,296 were examined, gonococci were present in 234.
Stools.—783 specimens were examined. Endamoeba histolytica were found in 144; Giardia lamblia in 52; ova of Ascaris lumbricoides in 9; ova of Hymenolepis nana in 16; ova of Hook worms in 3; ova of Trichocephalus trichiuris in 1; ova of T. saginata in 2; ova of Trichostrongylus orientalis in 1; Enterobius vermicularis ova and adult worms in 6; Shigella dysenteriae "Shiga" in 1; Shigella paradysenteriae in 7.
Cerebro-spinal fluids.—165 specimens were examined. Meningococci were present in 5; pneumococci in 4; streptococci in 1. H. influenza in 1; acid fast bacilli present in 1.
Other fluids.—124 specimens were examined. Acid fast bacilli were present in 6. Takata-Ara test positive on 4.
Pus.—50 were examined. Acid fast bacilli were present in 1; streptococcus haemolyticus in 2; streptococcus non haemolyticus in 1; B. anthracis in 2; pneumococci in 1; staphylococcus albus in 4 and staphylococcus aureus in 4.
Nasal scrapings and skin clips for leprosy.—23 nasal scrapings and 5 skin clips were examined for M. leprae. 12 nasal scrapings and 2 skin clips were positive to leprosy.
Naso-pharyngeal and eye swabs.—2,142 were examined. Diphtheria bacilli were present in 359; meningococci were present in 1.
Drinking waters.—90 were examined.
Spleen smears from rats for B. pestis.—1,609 rat spleen smears were examined. Bipolar staining bacilli resembling B. pestis were not found in any smear.
Histology.—218 specimens were examined.
Casoni skin tests.—66 were done with 15 positive.
Melitin skin tests.—2 were done.
Hairs and scrapings for fungus.—7 were examined.
Examination of semen.—6 were examined.
Cheese.—2 were examined.
Colloidal test of blood serum.—1 was done.
Penicillin for bacteriostatic value.—2 were examined.
Liver puncture for iron.—1 was done.

S. PAVLIDES,
 Acting Government Pathologist.

APPENDIX C.

ANNUAL REPORT ON THE WORK DONE AT THE GOVERNMENT CHEMICAL LABORATORY
DURING THE YEAR 1946.By L. CH. HARALAMBIDES, *Acting Government Chemist.*

The total number of samples analysed during the year was 3,721 compared with 3,425 of the previous year. This increase is due to the large number of samples submitted by the Controller of Supplies.

The samples for the year 1946 are divided into official and non-official samples and classified under the different headings shown in Tables I and II.

TABLE I.
Official Samples.

Food and Drugs	..	..	..	472
Criminal	..	..	..	164
Waters	..	..	..	211
Customs	..	..	..	62
Miscellaneous	..	..	..	2,720
				<hr/> 3,629 <hr/>

TABLE II.
Non-Official Samples.

Foodstuffs	..	..	..	23
Animal Visera	..	..	..	37
Waters	..	..	..	15
Miscellaneous	..	..	..	17
				<hr/> 92 <hr/>

The samples falling under the different headings are considered in detail in the following sections.

1. *Food and Drugs.*

The number of samples examined under this head shows a very slight increase.

In this number were included samples submitted by the Controller of Supplies and the Municipal Corporations of Limassol, Famagusta, Larnaca and Nicosia.

The following Table III shows the percentage of food samples analysed and the percentage adulterated in each district.

TABLE III.

<i>District</i>	<i>Samples Analysed</i>				<i>Genuine</i>	<i>Below Standard</i>				<i>Percentage</i>
Nicosia	217	..	163	..	54	..	24.8
Famagusta	28	..	18	..	10	..	35.7
Larnaca	81	..	52	..	29	..	35.8
Limassol	130	..	110	..	20	..	15.3
Kyrenia	6	..	5	..	1	..	16.6
Paphos	10	..	1	..	9	..	90.0
				<hr/> 472 <hr/>	..	<hr/> 349 <hr/>	..	<hr/> 123 <hr/>	..	<hr/> 26.1 <hr/>

The percentage adulteration of 26.1 is much higher than last year.

2. *Criminal Investigations.*

Exhibits in murder and stabbing cases	..	..	..	..	..	90
„ in rape assault cases	..	..	..	..	..	5
„ in poisoning cases and poisons seized from unauthorized persons	..	..	..	..	..	26
„ in abortion cases	..	..	..	..	..	1
„ in shopbreaking	..	..	..	..	..	16
„ in explosives	..	..	..	..	..	25
„ in arson cases	..	..	..	..	..	1
						<hr/> 164 <hr/>

3. *Waters.*

Two hundred and eleven samples of water were examined during the year. Of these 128 were found to be chemically satisfactory, the rest being either contaminated with organic impurities, hard, saline, or a combination of these. Most of these samples were submitted by the Water Engineer.

4. *Customs.*

Sixty-two samples were submitted for analysis including samples of waters from Larnaca Salt Lake, different foodstuffs, cloths, and oils.

5. *Miscellaneous.*

Owing to the new regulations for cheese, 2,720 samples were submitted and analysed for fat content. Four boys were temporarily appointed and paid by the Controller of Supplies Department for those analyses, but the whole scheme was under my supervision and responsibility.

Under this scheme different samples of flour, soap, cotton seed oil, olive oil and condensed milk were examined for the Controller of Supplies.

Many samples were also examined for the D.M.Os and for the Military Authorities.

A large number of Tank effluents were examined for the information of Public Works Department, and waters from Syrianochori fish pond for the Water Engineer.

6. *Scientific Education.*

The usual examination for the Government Certificate in Chemistry was held on the 21st and 22nd January, 1946. Eighteen candidates presented themselves, eleven of whom were successful, and were awarded the Government Certificate in Chemistry.

7. *Non-Official Samples.*

Table II shows the total number of samples submitted on payment. Fifteen samples of animal viscera contained Arsenic, two contained Paris Green and six soluble salts of Barium.

This section included a large number of waters, foodstuff, etc.

APPENDIX D.

REPORT ON PRESENT STATE OF KNOWLEDGE OF ERYTHROBLASTIC ANAEMIA IN CYPRUS.

By A. L. FAWDRY, M.A., M.D. (Cantab.), *District Medical Officer.*

INTRODUCTION.

This report summarises observations made in Cyprus in the course of duties as District Medical Officer in turn of the districts of Famagusta, Larnaca, Paphos, Nicosia and Limassol, during the years 1940 to 1946, inclusive. Erythroblastic Anaemia has been studied chiefly in America, Greece, and Italy; alternative names are Mediterranean anaemia and Cooley's anaemia, the latter after T.B. Cooley (ob. 1946) who in 1927 first distinguished such cases from other forms of childhood anaemia. Apart from a few from Cyprus described in papers originating elsewhere, no mention of its occurrence here had been made until the present writer's article published in 1944. It is seen nowhere else in the British Empire except possibly in Malta.

GENERAL DESCRIPTION.

Amongst people of Eastern Mediterranean stock there is a fairly high incidence of a peculiarity of the blood cells which, as it brings no harm to the possessor, can scarcely be classed as a disease; it is usually known as the Mediterranean trait, and is familial in incidence. The trait consists in the possession of red blood cells which are (a) less uniform in size and shape, (b) thinner than the normal human cells, and can be detected by laboratory tests. In the families who possess this trait, however, are found occasional children whose blood is not only abnormal in quality but deficient in quantity; whether the deficiency is due to inadequate manufacture or too rapid destruction is uncertain but probably both processes are involved. The deficiency of blood, i.e. anaemia may make its appearance at any age and possibly may arise in utero and bring about miscarriage but the usual history is that the child was apparently quite healthy for the first few months of life and then fell ill with irregular fever and intestinal upset, following or during which pallor and weakness made their appearance and remained permanent. However the onset is rare before 3 months and extremely uncommon after 8 years. Accompanying the anaemia are many other signs of disease, of which enlargement of the spleen and changes in the shape of the bones of the head, giving a mongoloid face, are the two most striking. The actual disability of the child depends entirely on the degree of anaemia; if the concentration of haemoglobin in the blood is less than 25% of normal the child is usually unable to walk or play owing to the weakness and shortness of breath accompanying every muscular effort; between 25% and 50% the child can walk and play but scarcely run, and when over 50% the disability is very slight. No pain is caused and the child's mental development is normal, in fact a fair proportion seem to be above the average in intelligence.

The course of the disease is variable; in general the earlier the onset, the more rapid the development and the greater the degree of the anaemia. After the period of the febrile onset has passed the body usually seems to adapt itself to the new condition of the blood and the progress of the disease is arrested for a period of years. Gradually, however, the child's demands on its body exceed the latter's capabilities and heart-failure sets in, though the child's decease is usually precipitated by some intercurrent infection e.g. bronchopneumonia.

Thus ends a short span of life, rarely more than 8, often less than 3 years, which brings about as much misery to the parents as to the suffering child.

In a few cases even seriously anaemic children do survive to puberty and beyond but their existence is often rather miserable and they have not the strength needed to earn a living for themselves. Others, it is at present impossible to estimate how many, develop a mild degree of anaemia with enlargement of the spleen and suffer only slight weakness which does not hinder them in their work and everyday life.

INCIDENCE.

The incidence of the trait, or blood peculiarity, is high in the Island; a recent survey of 500 schoolchildren in Limassol district shows that about 17% are affected, and as this is medically speaking an unselected sample we may assume that this figure is roughly true for the whole indigenous population of Cyprus, both Greeks and Turks.

The incidence of the disease can only be guessed at but an entirely subjective estimate hazarded by the present writer, on the basis of more than 100 cases seen in 7 years, is one per 1,000. There is little difference apparently in incidence amongst Greeks and Turks, which is in contrast to that found in the mother countries; very many have been reported from Greece but very few from Turkey. Male children are more affected than females, in the proportion of about 3 to 1. There seems to be a fairly even distribution all over the Island, town and country, hill and plain, amongst all classes of society.

Enquiry from the parents of an affected child usually elicits the fact that there have been at least one other case of a similar fatal children's illness in the family or in relatives; occasionally parents have the misfortune to see each of their children succumb in turn, the earlier ones dying and one at last surviving as a chronic invalid. The inheritance of the disease and of the trait and the relationship between the two has not yet been completely elucidated; a detailed study on these lines is being carried out at the time of writing by Banton and will be published in due course. It appears likely that the trait is inherited as a Mendelian dominant, and that the presence of the trait in both parents makes the emergence of the disease highly probable in the offspring.

RELATIONSHIP TO OTHER DISEASES.

Two other diseases frequent in children in the Island resemble Erythroblastic Anaemia in causing anaemia with splenic enlargement; these are chronic malaria and kala-azar (visceral leishmaniasis); distinction between them usually requires careful laboratory examination of blood taken from a vein and from the bone-marrow, and is important as these two are eminently curable in contrast to erythroblastic anaemia. As the incidence of malaria has dropped throughout the Island in recent years, the cases of erythroblastic anaemia stand out more clearly and indeed one can say without hesitation that severe chronic anaemia in a child in Cyprus is nearly always of this type.

A blood disorder very closely resembling erythroblastic anaemia is widespread in the negro race; it is known as sickle-cell anaemia owing to the shape of the abnormal red cells under certain conditions, but it affects young adults more than children. The disorder of blood formation, the pathology of the disease and its hereditary nature parallel those of erythroblastic anaemia very closely. In other European races, the two diseases, familial acholuric jaundice and erythroblastosis foetalis have features in common with erythroblastic anaemia but it is curious that to some extent they seem to be mutually exclusive. Cooley's anaemia is excessively rare in England and in spite of careful enquiry and observation the writer has been unable to record a single case of either familial acholuric jaundice or erythroblastosis foetalis in Cyprus.

DIAGNOSIS.

The certain diagnosis of the disease is of great importance owing to the poor prognosis which must usually be given and the futility of all treatment save transfusion. Though we cannot cure the disease we can at least save the parents the expense and the child the discomfort of being treated for diseases from which he is not suffering. One patient to my knowledge has been treated in turn, and needless to say, in vain, for glandular deficiency, congenital syphilis, chronic malaria, and kala-azar. Most of the parents have at one time or another paid for quinine injections and some reduce themselves to distraction and almost to destitution in visiting one doctor after another hoping against hope for a remedy. Fortunately the disease is now receiving much wider recognition and in its grosser forms it can be diagnosed with a fair degree of certainty without laboratory facilities. There remain many, though, who can be labelled as suffering from this disease only after careful laboratory examination of the blood. In any case a child may be affected with a second disease superimposed on the erythroblastic anaemia, and the treatment of former may materially improve his condition.

AETIOLOGY.

Next to nothing is known of the root cause of the disease, and much remains to be discovered even about the mechanism of the blood disorder. The cells manufactured by the bone-marrow are deformed and there is a deep-seated disorder of formation and destruction of the pigment haemoglobin. But progress in haematology has been as rapid as any other branch of medicine in the last 20 years, new light is being shed on these problems every month and we may justifiably hope that sooner or later the illumination will reach this dark corner too.

TREATMENT.

There can be, in the present state of knowledge, no radical treatment ; there is, alas, not even any empirical measure of value. The whole gamut of haematinics, hormones and vitamins has been tried in vain. In transfusion we have a means of treatment which is disappointing in the extreme ; the anaemic child in a few hours is transformed from a helpless gasping creature into a more or less normal individual able to walk and play with pleasure ; but in the course of a few weeks, he slips back rapidly into his original condition. The answer to the problem therefore, as far as relief of symptoms is concerned, is to keep the child's blood in a condition approximating to normal by transfusion repeated for life at about 2 months intervals. This is in theory possible but in practice, under present circumstances, impossible. When transfusion is repeated many times, severe and even fatal febrile reactions may occur ; the technical difficulty of infusing blood into the minute veins of small children becomes well-nigh insuperable ; the finding of compatible donors becomes almost as exhausting as the performance of the transfusion ; and one faces the metaphysical problem of whether for a child a continued life of semi-invalidism frequently punctuated by the unpleasant experience of transfusion is better than no life at all.

CLINICAL DETAILS.

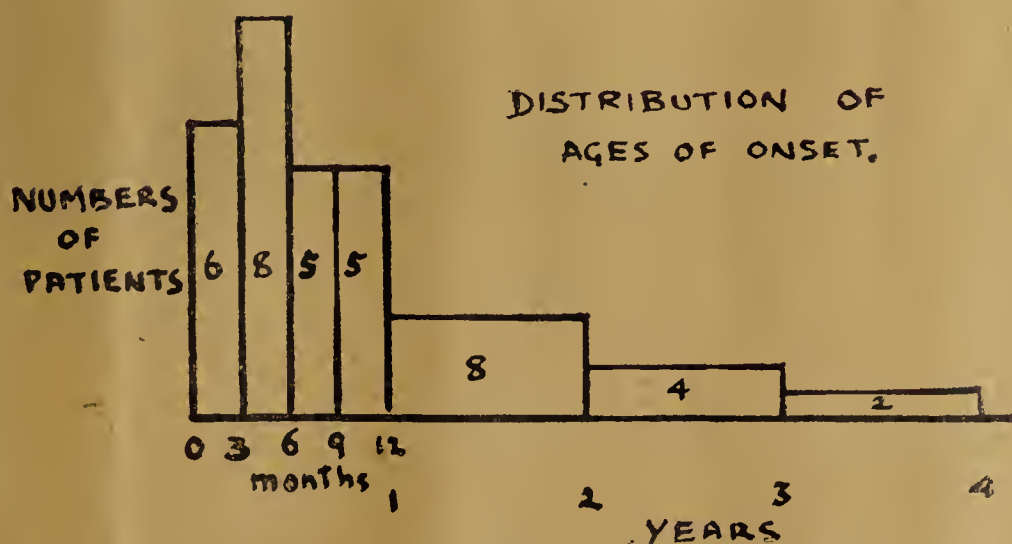
In two previous papers, published respectively in the *Lancet* and the *Transactions of the Royal Society of Tropical Medicine and Hygiene*, the clinical and haematological features of Erythroblastic Anaemia in 19 children and in 6 adults were described fairly fully. It seems opportune to add to these descriptions a few diverse observations and conclusions from study during the last two years also.

THE AGE OF ONSET IN 42 CASES.

Table I.

Age.	No. of Cases.
0-3 months	6
3-6 "	8
6-9 "	5
9-12 "	5
1-2 years	8
2-3 "	4
3-4 "	2
4 " upwards	4

Figure 1.



Few cases have been able to be followed throughout life but it is in general the case that the later the onset the less the degree of anaemia and the later the fatal issue.

CLINICAL FEATURES.

The variability of even the most striking physical signs is emphasized by the following table giving cases in which one of the classical signs was absent. These are in-patients presenting on account of the prime feature, i.e. anaemia ; but of course there exists a number of non-anaemic persons harbouring the erythrocyte trait in whom one or other of the signs may be found e.g. splenomegaly ; doctors in the Island must be alive to this possible cause or otherwise unexplained splenic enlargement. The writer can recall one or two cases of combined splenomegaly and hepatomegaly seen before these studies were undertaken, which remained undiagnosed at the time but which, in retrospect, were quite possibly to be explained on these lines.

Table II.

<i>Phys. Sign.</i>	<i>Total cases recorded.</i>				<i>Absent in—</i>			
Splenomegaly	54	..	..	..	3			
Hepatomegaly	54	..	..	..	22			
Adenopathy	41	..	..	..	13			
Systolic murmur	39	..	..	..	5			
Mongoloid face	52	..	..	..	20			

The hepatomegaly when very marked is due in part to heart-failure and in one case the relief of the latter by transfusion resulted in a very marked shrinkage of the liver (from 5 to 2 finger breadths below the costal margin).

Two clinical features hitherto unrecorded have been noted ; in cases of early onset the bone-changes result in a premature closure of the fontanelle ; even at one year old it may be quite ossified. This is unusual but if found is, as far as the writer is aware, absolutely pathognomonic of this disease. In the adolescent and adult cases, indolent ulcers of the legs are common and add much to the burden of the sufferer ; they heal slowly when the subject rests in bed and seem to resemble very closely those of patients with acholuric jaundice and sickle-cell anaemia.

HAEMATOLOGY.

There is nothing to add to the general description given in the previous papers ; no studies have been able to be made on the platelets but the occasional recording of prolonged bleeding time and in one case of petechial haemorrhages makes it seem likely that they do not altogether escape the disorder which primarily affects erythrocytes. Likewise the occurrence of a small proportion of primitive white cells (myelocytes) and a considerable lymphocytosis in young children seems to show that leucopoiesis may also be disturbed. It is difficult in a region where chronic malaria is, or has been, common, and syphilis widespread, to assess the true significance of the serological tests for the latter disease but it is worthy of record that a single plus Wassermann reaction does occur in these erythroblastic patients when evidence of congenital or acquired syphilis is absolutely unobtainable, and that therefore this anaemia should be added to the list of diseases which make the W.R. test a non-specific one.

The one universal feature of all cases of this anaemia and characterising indeed the trait of the disease is an increased proportion of the red cells resistant to haemolysis by hypotonic saline solutions. No case of this anaemia has been found here with a normal fragility curve. It is a somewhat troublesome proceeding to plot the whole curve and positive abnormals can easily be spotted by the expedient of choosing the concentration of saline most likely to show a difference between normal and abnormal bloods. As the concentration is reduced normal blood is to all intents and purposes completely haemolysed by 30%, i.e. 3 per 1,000 saline. Nearly all cases of erythroblastic anaemia have a considerable proportion of their cells unhaemolysed at this concentration and thus by the simple test of mixing one drop of the patient's blood in about 0.5 cc 30% saline and observing after 2-3 minutes whether the solution is cloudy or clear, the presence of the erythroblastic trait can be discerned. It does not of course follow that the patient's disease, whether anaemia or other, is necessarily erythroblastic anaemia, but, as far as can be ascertained, no other diseases common in Cyprus cause so profound a change in the fragility curve that a significant proportion of cells remain intact in 30% saline. Confirmatory evidence of the presence of the trait is of course afforded by finding this changed fragility in other members of the family. Usually both parents of a child with definite Cooley's anaemia are found to have the trait, but occasionally only one of them. In some of the anaemic subjects with extremely marked morphological changes in the erythrocytes, a large proportion of the cells remain whole even in distilled water, though they lose haemoglobin into the surrounding fluid and change from poikilocytic to circular in outline. Another peculiar feature to be noted when the blood from these patients is diluted in saline hypotonic enough to lyse normal cells is the formation after half hour or so of a tenuous clot which envelopes all the unhaemolysed cells and can be withdrawn whole from the surrounding fluid. Microscopically nothing but the distended erythrocytes can be seen in it.

INCIDENCE.

The writer's estimate is hazarded on a subjective impression obtained during 7 years of different parts of Cyprus that there exists about one child with Cooley's Anaemia proper for every two villages, over the whole Island. This gives a total of about 400 in the Island as a whole at any one time, an incidence of the order of 1 in 1,000 of the population and of 1 in 230 of children under 10. The incidence amongst Turks seems roughly the same as that amongst Greeks ; no case has, as far as is known, been recorded in the Island in any of the other races represented e.g. Armenians, English. Males are definitely more often affected than females, in the proportion of three to one.

A survey of the incidence of the trait, by the simplified fragility test mentioned above was recently carried out in Limassol district with the following results:—

Table III.

	<i>No. Examined</i>				<i>Trait Positive</i>				<i>Percentage</i>
<i>Greek :</i>									
Males	224	..	41	..	18%				
Females	193	..	30	..	15%				
Total	417	..	71	..	17%				
<i>Turkish :</i>									
Males	62	..	10	..	16%				
Females	53	..	14	..	27%				
Total	115	..	24	..	21%				

The figures for Turks are not large enough to make the apparent discrepancy between male and female incidence significant and probably as amongst the Greeks the trait is of equal incidence in males and females. The figures certainly show that a surprisingly high proportion of the population harbour this blood peculiarity, and that there is an approximately even distribution between males and females ; this is in contrast to the preponderently male incidence of the fully-developed disease.

As the occasion for this survey was primarily the examination of thick films for malaria parasites, an opportunity was given for appraising any relationship between the presence of parasites and this blood trait. There is apparently no relationship as the incidence of the trait in the 101 children found infected was 23%, an insignificant deviation from the 17% incidence in the whole 532.

There has not yet been opportunity to discover whether there exists amongst Cypriots a continuous gradation of blood fragility from the "normal" as recorded by British authors, of which the above simplified test detects only the grossest deviations. Nor, a fascinating question, whether the abnormal blood exists in these persons from birth or whether it develops at the same time after birth as that at which Cooley's anaemia itself appears. A survey and follow-up of infants should clear up this point.

PATHOGENESIS.

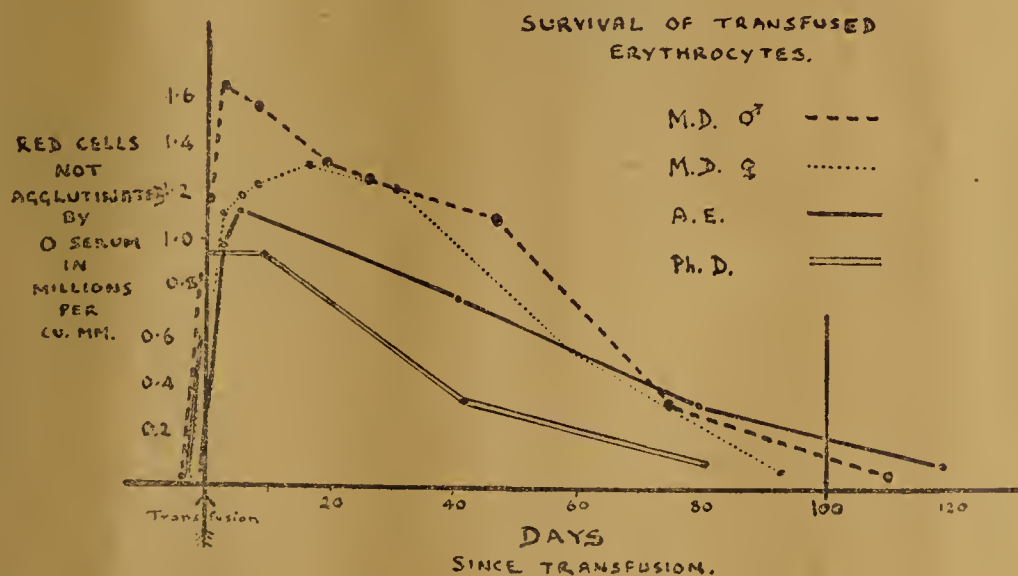
It has been a moot point whether Cooley's Anaemia should be classified as a haemolytic or a dyshaemopoietic disorder. Almost certainly as in pernicious anaemia, both processes are at work; an indication as to whether an increased rate of blood destruction is the primary factor can be obtained by noting how rapidly transfused blood from a normal subject is destroyed by the Cooley patient. Previous observations on the rate of return of the haemoglobin level after transfusion, to the pre-transfusion level indicated that normal corpuscles were not destroyed particularly rapidly, but the following tables and their graphs show this more clearly:—

Table IV.

Survival of Group O Red Cells Transfused into 4 Cases of Cooley's Anaemia.

1. M.D. O age 13. Hb 45% Transfused 18.1.46 :											
Days after transfusion	0	2	8	19	26	47	75	110	151		
Inagglutinable Corpuscles, in millions											
mm. cu.	0.02	1.62	1.54	1.31	1.24	1.09	0.33	0.04	0.04		
2. M.D. O age 16. Hb 55% Transfused 4.2.46 :											
Days after transfusion	0	2	5	8	16	30	58	93	137		
Inagglutinable Corpuscles	0.04	1.09	1.17	1.12	1.31	1.21	0.56	0.06	0.03		
3. A.E. O age 27. Hb 50% Transfused 24.3.46 :											
Days after transfusion	0	2	5	41	80	119					
Inagglutinable Corpuscles	0.04	0.96	1.10	0.76	0.31	0.08					
4. Ph. D. O age 3. Hb 30% :											
Days after transfusion	0	0	9	42	81						
Inagglutinable Corpuscles	0.02	0.94	0.94	0.33	0.09						

Figure 2.



The donors were healthy Englishmen of Group O and the survival of their erythrocytes was followed by the modified Ashby technique; high fibre Group O serum was used to precipitate the recipient's cells leaving the O cells to be counted.

The graphs show that the cells survived for about 100 days which is the figure given for their survival in normal recipients. We may conclude that Cooley's Anaemia is not primarily haemolytic and any haemolysis which does occur is due to the more rapid destruction of the abnormal cells originating from the bone-marrow. To one other child with Cooley's Anaemia having a Hb of 25% (Sahli) was given enough blood from a non-anaemic Cypriot with the "trait" (father of a Cooley child) to raise it to 60%; in 2 weeks only the Hb fell to 35% during which time the child had daily fever and slight icterus. Unfortunately it was not possible to carry out differential erythrocyte counts in this case but it would seem that the abnormal cells were destroyed abnormally rapidly, thus confirming the above tentative conclusion.

TRANSFUSION.

There are two observations on the technique of transfusion in these young children to be recorded:

(a) The tying-in of a cannula into a vein becomes more and more difficult as the available superficial veins become smaller. Transfusion into the bone-marrow of the tibia offers a ready solution to the impasse otherwise reached with repeated intravenous infusions in small children; it is usually necessary to provide some force other than gravity to introduce the blood into the marrow cavity e.g. a 10 cc syringe with a valve which withdraws blood from the reservoir and ejects it into the marrow; this incidentally causes pain and an analgesic is necessary for the child.

(b) The larger the volume of blood transfused the more satisfactory the effect, and it is no more trouble to transfuse 1,000 cc than 200 cc. As long as the rate of transfusion is extremely slow, about 5 cc per hour, large quantities of blood can be given safely; to one child of 3, 1,200 cc were given over 24 hours. The actual volume of fluid introduced can be reduced considerably by allowing the red cells in the reservoir to settle and rejecting the supernatant plasma at the end. If done at all rapidly such attempts roughly to double or treble the quantity of blood in the child cause right heart-failure and death.

COURSE OF THE DISEASE.

It has not been possible to follow up many cases for the period of these observations but it certainly appears that if the anaemia is 40% or over at 5 years old, the child has a good chance of surviving to adult age though sexual development may be retarded and incomplete. Most of the children afflicted in the first two years of life die before puberty, but there is only a rough correspondence between the age of onset and the severity of the anaemia. Some of the children whose illness started after 2 develop such a profound anaemia that their survival for more than another 2 years is unlikely. On the other hand a great improvement in the patient's condition may take place for no apparent reason later on: e.g. an adult case aged 20 seen first in 1940 was only 4 feet 8 $\frac{3}{4}$ in height and profoundly disabled; seen in 1946, he had grown 5 inches, his abdominal swelling was scarcely noticeable and his general disability very slight. Sometimes this recovery may follow but not necessarily be due to transfusion; one child aged 2 admitted moribund with a haemoglobin of about 10% used two transfusions at 3 month intervals but after the third maintained her improvement for almost a year, the Hb having remained at between 50% and 40% during this time. There has not yet been opportunity to see what the effect of artificially maintaining one of these children's blood at approximately normal strength over a period of years will have on its haematological and general development.

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 (1946 Trans. Roy. Soc. Trop. Med. & Hyg. 40. 87.)
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APPENDIX E.

RETURN OF DISEASES AND DEATHS FOR THE YEAR 1946.

No. in International List, 1938 revision		Diseases	IN-PATIENTS					OUT-PATIENTS			
			Remaining in Hospital at end of 1945	Treated and discharged or died			Deaths	Remaining in Hospital at end of 1946	Male	Female	Total
				Male	Female	Total					
GROUP I.											
1 & 2	(a) Typhoid fever	8	77	75	152	17	6	74	66	140	
	(b) Paratyphoid fever (specify A, B or C)	—	9	8	17	—	—	4	—	4	
5	Undulant fever	—	—	—	—	—	—	—	—	—	
6	Cerebrospinal meningitis	—	6	3	9	2	—	2	1	3	
7	Anthrax	—	1	1	2	—	—	2	1	3	
8	Scarlet fever	—	1	3	4	—	—	3	2	5	
9	Whooping cough	—	—	—	—	—	—	56	44	100	
10	Diphtheria	3	52	47	99	20	1	39	32	71	
11	Erysipelas	—	6	6	12	—	1	48	49	97	
12	Tetanus	—	3	3	6	3	—	—	—	—	
13	Tuberculosis of respiratory system	1	18	9	27	3	1	70	37	107	
14-22	Other forms of tuberculosis	3	41	29	70	8	7	25	21	46	
23	Leprosy	—	—	—	—	—	—	5	1	6	
27	Dysentery :—										
	(a) Amoebic	—	2	4	6	—	—	21	20	41	
	(b) Bacillary	1	6	8	14	1	2	34	23	57	
	(c) Undefined	—	3	2	5	—	—	53	38	91	
28	Malaria :—										
	(a) Benign Tertian	—	2	4	6	—	—	933	920	1,853	
	(b) Quartan	—	—	—	—	—	—	158	214	372	
	(c) Subtertian	—	1	1	2	—	—	219	136	355	
	(d) Undefined	—	59	77	136	1	—	883	977	1,860	
	(e) Blackwater fever	—	—	—	—	—	—	—	—	—	
29	Other diseases due to Parasitic Protozoa except Spirochaetes	1	9	—	9	1	—	10	3	13	
30	Venereal diseases :—										
	Syphilis	—	22	7	29	2	2	1,320	875	2,195	
25	Gonorrhoea	—	6	3	9	—	—	750	1,063	1,813	
44a	Other V.D.	4	4	3	7	—	1	367	65	432	
31	Relapsing fever	—	—	—	—	—	—	3	1	4	
32	Other diseases due to Spirochaetes	—	1	1	2	—	—	—	—	—	
33	Influenza :—										
	(a) With respiratory complications	—	11	13	24	—	1	1,448	1,454	2,902	
	(b) Without respir. complications	—	17	20	37	1	1	2,940	2,461	5,401	
34	Small-pox	—	—	—	—	—	—	—	—	—	
35	Measles	—	1	—	1	—	—	4	3	7	
36	Acute Poliomyelitis	—	2	1	3	2	—	1	1	2	
38	Other diseases due to viruses :—										
	(a) Dengue	—	—	—	—	—	—	—	—	—	
	(b) Herpes Zoster	—	1	1	2	—	—	37	36	73	
	(c) German Measles	—	—	—	—	—	—	—	—	—	
	(d) Chicken Pox	—	—	—	—	—	—	116	94	210	
	(e) Sand Fly Fever	—	7	9	16	—	—	74	37	111	
39	Typhus	—	—	—	—	—	—	—	—	—	
41	Hydatid disease	2	18	29	47	3	1	45	39	84	
42	Other helminthic diseases	—	6	4	10	—	—	732	1,084	1,816	
26, 37, 24	Other infective or parasitic diseases	—	44	16	60	3	—	197	127	324	
43											
44	Mumps	—	1	4	5	—	—	6	8	14	
GROUP II.											
45-55	Cancer and other tumours :—										
45-55	(a) Malignant	5	100	173	273	18	11	79	177	256	
56	(b) Non-malignant	—	33	67	100	2	—	88	128	216	
57	(c) Unspecified	2	1	9	10	—	—	39	43	82	
GROUP III.											
58-60	Rheumatic conditions :—										
58	(a) Acute	4	20	29	49	—	—	662	1,046	1,708	
59	(b) Chronic	1	30	36	66	—	—	1,727	2,236	3,963	
60	(c) Gout	—	—	—	—	—	—	215	309	524	
61	Diabetes	—	22	11	33	2	1	43	52	95	
62-66	Diseases of endocrine glands	1	2	21	23	—	—	41	135	176	
67	Scurvy	—	—	—	—	—	—	1	1	2	
68	Beriberi	—	—	—	—	—	—	—	—	—	
69	Pellagra	—	1	—	1	—	—	2	2	4	
70-71	Other vitamin deficiency diseases	—	4	1	5	—	—	237	386	623	
GROUP IV.											
73	Anaemias :—										
	(a) Pernicious	—	1	3	4	2	—	6	18	24	
	(b) Other	2	33	28	61	3	1	899	1,752	2,651	
72, 74, 76	Other diseases of the blood and blood forming organs	—	10	4	14	1	2	176	174	350	
GROUP V.											
77	Acute and chronic poisoning :—										
	(a) Alcoholic	—	2	—	2	—	—	24	—	24	
78-79	(b) Other	—	2	4	6	—	—	21	14	35	
Carried forward											

RETURN OF DISEASES AND DEATHS FOR THE YEAR 1946.

No. in International List, 1938 revision	Diseases	IN-PATIENTS						OUT-PATIENTS		
		Remaining in Hospital at end of 1945	Treated and discharged or died			Deaths	Remaining in Hospital at end of 1946	Male	Female	Total
			Male	Female	Total					
	Brought forward									
	GROUP VI.									
84	Mental diseases	—	10	42	52	—	—	68	290	358
85	Epilepsy	—	5	1	6	—	—	243	206	449
80-83	Other diseases of the nervous system	2	57	39	96	23	2	2,701	4,330	7,031
85-87										
88	Diseases of the organs of vision ..	—	71	81	152	—	6	*	*	16,846
89	Diseases of ear and mastoid sinus ..	—	21	7	28	—	1	1,369	1,275	2,644
	GROUP VII.									
90-95	Heart diseases	9	30	42	72	9	3	472	764	1,236
96-103	Other diseases of the circulatory sys- tem	1	68	50	118	2	3	1,311	1,755	3,066
	GROUP VIII.									
106	Bronchitis :—									
	(a) Acute	—	34	31	65	—	—	1,974	1,732	3,706
	(b) Chronic	1	25	12	37	1	2	1,136	1,195	2,331
107	Pneumonia :—									
	(a) Broncho	1	30	25	55	4	—	258	214	472
108	(b) Lobar	6	48	13	61	5	1	171	140	311
109	(c) Unspecified	—	20	13	33	2	1	202	158	360
110	Pleurisy	1	29	32	61	2	3	145	103	248
104, 105, 114, 111, 112	Other respiratory diseases (excluding Tuberculosis)	1	52	32	84	3	2	1,668	1,429	3,097
	GROUP IX.									
117	Ulcer of stomach and duodenum ..	3	77	15	92	2	3	569	254	823
	Diarrhoea and Enteritis :—									
119	(a) Under 2 years	—	15	7	22	3	1	1,637	1,635	3,272
120	(b) Over 2 years	3	52	76	128	3	—	2,233	2,017	4,250
121	Appendicitis	11	225	536	761	2	14	773	1,362	2,135
122	Hernias	8	332	59	391	18	9	977	261	1,238
125-127	Diseases of the liver and biliary passages	6	44	44	88	7	4	535	586	1,121
115, 116, 118, 123, 124, 128, 129	Other diseases of the digestive system	2	275	233	508	20	3	8,516	9,771	18,287
	GROUP X.									
130-132	Nephritis	3	23	27	50	6	1	262	393	655
134	Calculi of urinary passages	—	32	30	62	2	2	185	169	354
133-139	Other non-venereal diseases of the genito-urinary system	9	181	349	530	8	10	684	2,284	2,968
	GROUP XI.									
141	Abortions	5	—	372	372	1	7	—	259	259
144, 147, 148	Toxaemias of pregnancy	—	—	26	26	3	—	—	410	410
150	Deliveries	27	—	844	844	3	27	—	—	—
140, 142, 143, 146, 149, 145	Other conditions of the puerperal state	2	—	149	149	4	3	—	1,014	1,014
	GROUP XII.									
151-153	Skin diseases	4	165	116	281	—	11	8,263	7,058	15,321
	GROUP XIII.									
154-156	Diseases of the bones (excluding Tuber- culosis)	15	89	36	125	—	4	505	489	994
	GROUP XIV.									
157	Congenital malformations	—	25	19	44	—	4	19	8	27
	GROUP XV.									
158	(a) Congenital debility (under one year of age)	—	—	1	1	—	—	17	7	24
159	(b) Premature birth (excl. stillbirths)	—	—	—	—	—	—	—	4	4
160	(c) Injury at birth	—	—	—	—	—	—	2	3	5
161	(d) Other conditions	—	—	1	1	—	—	8	9	17
	GROUP XVI.									
162	Senility	—	6	5	11	—	—	87	160	247
	GROUP XVII.									
163-164	† External causes :									
	(a) Suicide	—	—	4	4	—	—	4	2	6
165-168	(b) Homicide	—	7	2	9	—	1	—	—	—
169-198	(c) Other causes	20	713	246	959	29	17	5,054	3,046	8,100
171	(d) Road accidents	2	8	4	12	—	15	147	43	190
	GROUP XVIII.									
199-200	Ill-defined causes	8	49	41	90	7	—	1,154	1,222	2,376
	Total	188	3,516	4,439	7,955	264	199	—	—	137,597

* Figures not available.

† Nature of, to be specified.

APPENDIX F.

FINANCIAL REPORT

MEDICAL DEPARTMENT.

Expenditure, 1946.

	£	s.	p.
Personal Emoluments	51,798	0	7
Training of Medical Department Officials	893	13	7
Leave Pay to Regular Wages Employees	141	15	4
<i>Travelling :—</i>			
Transport	5,413	9	8
Subsistence	834	8	5
Commuted Allowances	171	10	0
Maintenance of Ambulances and Motor Transport	2,390	4	2
<i>Food, Clothing and Miscellaneous :—</i>			
Central Hospital, Nicosia	12,347	13	0
Limassol Hospital	4,112	4	6
Larnaca Hospital	3,141	15	2
Famagusta Hospital	3,322	13	4
Paphos Hospital	1,175	1	2
Kyrenia Hospital	1,047	17	1
Mental Hospital	7,383	5	6
Sanatorium, Nicosia	3,545	15	1
Sanatorium, Kyperounda	8,522	1	7
Leper Farm	6,436	12	8
Tuberculosis Dispensary	24	0	0
Drugs and Surgical Supplies	19,663	10	4
Care of Healthy Children of Lepers	48	0	0
Prevention of Disease	19,873	16	2
Venereal Clinics	130	18	8
Rat Destruction	569	0	4
Conservancy of Offices	929	3	4
<i>Laboratories :—</i>			
Chemicals and Equipment	146	7	5
The Food and Drugs Law	4	0	7
Remuneration to Examiners in Pharmacy	8	0	0
Hospital Equipment	180	1	4
Transport of Patients for Radiological Treatment	120	0	0
Books and Periodicals	113	0	5
Uniforms	1,164	16	7
Rent	165	13	6
Refunds	9	12	5
Lighting, Heating and Electric Power	2,259	7	0
Incidentals	110	5	2
<i>Special Expenditure :—</i>			
Statistical Apparatus	34	12	1
Refrigerators	304	16	0
Maintenance of Radiological Apparatus, Limassol	80	0	0
Re-wiring of Electric Installation of the Evcaf Building	84	14	0
	£158,701	19	8



